AMENDMENTS TO THE CLAIMS

Presented below is a complete set of claims with current status indicators.

1. – 2. (canceled)

3. (currently amended) In an implantable medical device for implant within a patient, a method comprising:

receiving electrical cardiac signals having a series of cycles, each cycle including a ventricular repolarization followed by a ventricular depolarization;

identifying segments of the cardiac signals subsequent to a ventricular repolarization and prior to the ventricular depolarization following the ventricular repolarization; ~~and~~

comparing the difference between the total amount of energy in one of the identified segments and the running average of the total amount of energy in a plurality of the identified segments to a first threshold;

comparing just the running average to a second threshold; and

detecting cardiac ischemia ~~based on an examination of the identified segments; the examination comprising detecting a sharp falling edge within electrical cardiac signals within the identified segments~~ if either the first threshold or the second threshold is exceeded for a predetermined number of heart beats.

4. (currently amended) The method of claim 3 ~~wherein detecting the sharp falling edge comprises:~~ further comprising ~~filtering~~ routing the cardiac signals through a high-pass filter operative to pass all signals above a cutoff frequency, to yield a high-pass filtered signal[[;]].

~~deriving an energy value representative of a total amount of energy in the filtered signal within each identified segment;~~

~~deriving a running average of the energy value;~~

~~inputting first and second threshold values; and~~

~~detecting the sharp falling edge based on a comparison of the energy value, the running average, and the first and second thresholds~~.

5. (currently amended) The method of claim 4 wherein ~~filtering the cardiac signals comprises:routing the cardiac signals through a high-pass filter having a~~ the cutoff frequency is in the range of 0.1 to 5.0 Hz.

6. (currently amended) The method of claim 4 wherein ~~filtering the cardiac signals comprises: routing the cardiac signals through a high-pass filter having a~~ the cutoff frequency [[of]] is at least 1 Hz.

7. (currently amended) The method of claim [[4]] 3 wherein ~~deriving the energy value comprises~~ the total amount of energy in an identified segments is derived by calculating:

$$E_{PostT} = \sum_{k=Tstart}^{Tend} s(k)$$

~~for each identified segment,~~ wherein s(k) is a digitized version of the filtered cardiac signal, T_{start} and T_{end} are start and end points, respectively, of the identified segment, and k represents individual samples of the digitized signal.

8. (original) The method of claim 7 further comprising initially calculating T_{start} and T_{end} by:

identifying a pair of consecutive ventricular depolarizations (S1 and S2) within the cardiac signals;

determining a time interval (S_to_S_Interval) between S1 and S2;

setting T_{start} equal to S1 + S_to_S_Interval / 4; and

setting T_{end} equal to S2 - S_to_S_Interval / 4.

9. (currently amended) The method of claim [[7]] 3 wherein ~~deriving~~ the running average ~~comprises~~ of a plurality of identified segments is derived by calculating:

$$E_{PostT\_Ave}(i) = \alpha \cdot E_{PostT\_Ave}(i-1) + (1-\alpha) \cdot E_{PostT}$$

at time increment "i" where α is a predetermined value and wherein $E_{PostT\_Ave}(0)$ is set to a default value.

10. (original) The method of claim 9 wherein α is equal to 15/16.

11. (currently amended) The method of claim [[4]] 3 wherein, during comparing, ~~falling edge based on a comparison of the energy value, the running average, and the first and second thresholds comprises: determining whether either an~~ the absolute value of ~~the energy integral minus the running average exceeds the first threshold or an absolute value of just the running average exceeds the second threshold for a predetermined number of heart beats; and if so, generating a signal indicative of the onset of ischemia~~ the difference between the total amount of energy in one of the identified segments and the running average of the total amount of energy in a plurality of the identified segments is compared to the first threshold, and the absolute value of the running average is compared to the second threshold.

12. (currently amended) The method of claim [[11]] 3 further comprising detecting the end of [[the]] an episode of ischemia ~~by: determining whether both absolute value of the energy integral minus the running average falls below~~ if both the first threshold and ~~the absolute value of just the running average falls below~~ the second threshold are not exceeded for a predetermined number of heart beats~~; and~~.

~~if so, generating a signal indicative of the end of the episode of ischemia.~~

13. (currently amended) The method of claim [[1]] 3 further comprising:

generating a warning signal ~~indicative of the~~ if ischemia is detected.

14. (currently amended) The method of claim 13 wherein generating a warning signal ~~indicative of the ischemia~~ comprises:

applying a perceptible electrical notification signal to subcutaneous tissue.

15. (currently amended) The method of claim 13 wherein generating a warning signal ~~indicative of the ischemia~~ comprises:

transmitting a notification signal to a warning device external to the patient.

16. – 18. (canceled)

19. (currently amended) ~~In an~~ An implantable medical device ~~for implant within a patient, a method~~ comprising:

a sensing system operative to receive electrical cardiac signals having a series of cycles, each cycle including a ventricular repolarization followed by a ventricular depolarization, and to identify segments of the cardiac signals subsequent to a ventricular repolarization and prior to the ventricular depolarization following the ventricular repolarization;

~~a bandpass filter operative to filter the identified segments to yield a band-pass filtered signal;~~

a ~~filtered~~ signal integration unit operative to determine energy values representative of a total amount of energy within ~~portions of the filtered signals; and~~ identified segments; and

a threshold comparison unit operative to: ~~compare the energy values against threshold values indicative of cardiac ischemia; and~~

compare the difference between the total amount of energy in one of the identified segments and the running average of the total amount of energy in a plurality of the identified segments to a first threshold;

compare just the running average to a second threshold; and

detect cardiac ischemia if either the first threshold or the second threshold is exceeded for a predetermined number of heart beats ~~a cardiac ischemia warning system operative to output a signal indicative of the ischemia~~.

20. (currently amended) In an implantable medical device for implant within a patient, a system comprising:

means for receiving electrical cardiac signals having a series of cycles, each cycle including a ventricular repolarization followed by a ventricular depolarization;

means for identifying segments of the cardiac signals subsequent to a ventricular repolarization and prior to the ventricular depolarization following the ventricular repolarization;

~~means for filtering the cardiac signals to yield a band-pass filtered signal;~~

means for deriving energy values representative of a total amount of energy within ~~portions of the band-pass filtered signals subsequent to a ventricular repolarization and prior to the ventricular depolarization following the ventricular repolarization~~ identified segments;

~~means for detecting cardiac ischemia based on a comparison of the energy values against threshold values; and~~

~~means for generating a warning signal indicative of cardiac ischemia~~

means for comparing the difference between the total amount of energy in one of the identified segments and the running average of the total amount of energy in a plurality of the identified segments to a first threshold;

means for comparing just the running average to a second threshold; and

means for detecting cardiac ischemia if either the first threshold or the second threshold is exceeded for a predetermined number of heart beats.